

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
11 March 2004 (11.03.2004)

PCT

(10) International Publication Number
WO 2004/021539 A3

(51) International Patent Classification⁷: **H03K 5/1252**,
G06F 1/24

[NL/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **BUTSELAAR, Stefan, G., E.** [NL/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(21) International Application Number:
PCT/IB2003/003192

(74) Agent: **DEGUELLE, Wilhelmus, H., G.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(22) International Filing Date: 22 July 2003 (22.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02078581.2 30 August 2002 (30.08.2002) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

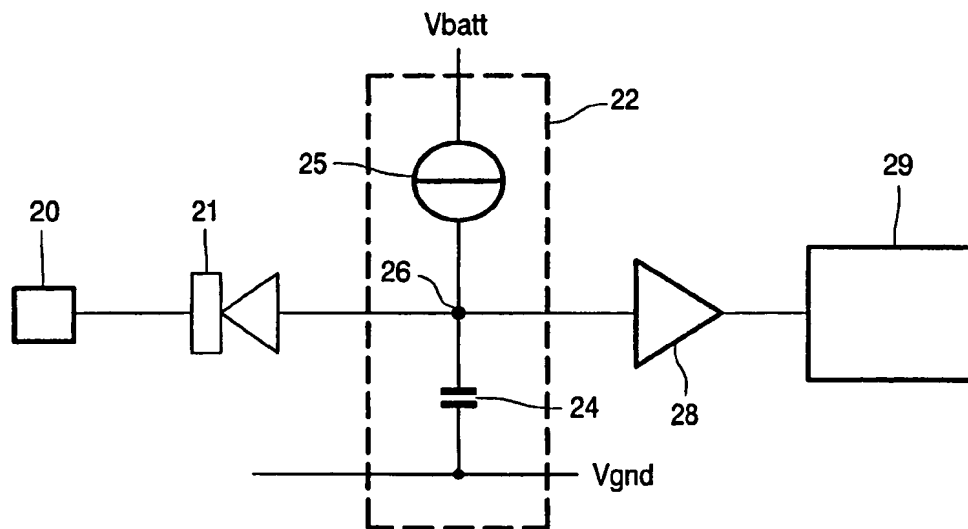
(72) Inventors; and

(75) Inventors/Applicants (for US only): **DE HAAS, Clemens, G., J.** [NL/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **KWAKERNAAT, Cecilius, G.**

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: TRANSITION DETECTION AT INPUT OF INTEGRATED CIRCUIT DEVICE



(57) Abstract: An integrated circuit has an input connection for connecting an external signal conductor that passes signals to execute functions in the device. The external signal conductor can pick up strong interfering signals with high frequency content, for example when the device is used in a car. To protect against unintended execution of functions the device contains a timer circuit comprising a capacitance and a current supplying circuit coupled to an integration node. A discharge diode is coupled between the input connection and the integration node, with a polarity such that the discharge diode, when in forward bias, is capable of draining current from the current supplying circuit. A detector is coupled to the integration node for generating a signal to be supplied to the integrated circuit device to respond to a signal transition on the conductor. The diode serves to reset integration on the integration node before the detector detects the transition in case of short pulses. By using a diode instead of a switching transistor the circuit is more robust against the effect of interfering pulses.

**Declaration under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE,

DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report

(88) Date of publication of the international search report:

22 April 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 03/03192

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H03K5/1252 G06F1/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H03K G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 0100, no. 95 (E-395), 12 April 1986 (1986-04-12) & JP 60 236320 A (MITSUBISHI DENKI KK), 25 November 1985 (1985-11-25)	1
Y	abstract	5-7
X	PATENT ABSTRACTS OF JAPAN vol. 0171, no. 93 (E-1351), 15 April 1993 (1993-04-15) & JP 4 341006 A (NEC CORP; others: 01), 27 November 1992 (1992-11-27)	1
Y	abstract	
Y	US 5 794 055 A (PIKULA MARK STANLEY ET AL) 11 August 1998 (1998-08-11) cited in the application abstract	5-7
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

28 January 2004

Date of mailing of the international search report

04/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Salm, R

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 03/03192

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 0091, no. 81 (E-331), 26 July 1985 (1985-07-26) & JP 60 051022 A (SHARP KK), 22 March 1985 (1985-03-22) abstract</p>	1

INTERNATIONAL SEARCH REPORT

International Application No
PCI/IB 03/03192

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 60236320	A	25-11-1985	NONE	
JP 4341006	A	27-11-1992	NONE	
US 5794055	A	11-08-1998	NONE	
JP 60051022	A	22-03-1985	NONE	